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AUTHOR Ettinger, Ronald F.; Kriner, Richard E.
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ABSTRACT

This paper describes two experiments involving a game in which the effects of a strategy upon attraction are investigated. The first experiment investigated the role of one's partner's strategy and the subject's own strategy upon attraction among the players of a mixed-motive game; the second experiment was carried out as an extension and replication of the first. Results indicate that, in general: (1) cooperative others were more favorably evaluated by most subjects than were competitive others; (2) similarity of strategy played a greater role among cooperative subjects than among competitive subjects; (3) cooperative subjects liked the group member who was most similar better than the others; (4) the least similar other was liked least; (5) for cooperative subjects, similarity and cooperation on the part of others were both working in the same direction; and (6) for competitive subjects, similarity and cooperation of others were not working in the same direction. (Author/TA)

INTERPERSONAL ATTRACTION IN A MIXED-MOTIVE GAME

Ronald F. Ettinger and Richard E. Kriner
Albion College Purdue University

(Presented in a somewhat different form at the MPA Convention, 1971.)

Since Luce and Raiffa (1957) introduced the Prisoner's Dilemma game (PD) as an instrument for use in the behavioral sciences, researchers have used the game in a variety of ways. The original game has been modified, expanded, decomposed, and transformed (e.g., Bixenstine, Levitt, & Wilson, 1966; Gallo & McClintock, 1965; Pruitt, 1967). Gallo and McClintock (1965) concluded that the PD"... provides an excellent framework within which problems of motivation, decision-making, personality, and perception of persons can be studied." The emphasis of the present experiment was not to investigate various parameters of the game itself, but to employ it as a tool in the study of interpersonal attraction.

A game may be defined as a situation in which the players have a certain goal or goals; the attainment of the goal depends upon both the strategy of the players and on the strategy of their opponents. The PD, originally a two-person game, has been extended for use in group situations. Basically it is a mixed-motive game, one in which the goals of the players are partially coincident and partially in conflict. In the present research each player had two buttons (red and green; see apparatus description, Experiment 1) which he pressed during the game. Payoffs were determined by the number of players who pushed the green button and the number of players who pushed the red button (see Figure 1). If all players were to push the green button, all would receive a relatively high payoff on a particular trial. If three

were to push the green button and one the red button, the players pushing green would get a lower payoff and the one pushing red would get an even higher payoff than in the four-green condition. As the number of red responses increases, the payoff for both red and green decreases. A green response is considered a cooperative response because it increases the payoff of the other players. The opposite is true for a red response; it decreases the payoff of the other players.

It has been hypothesized that the degree of liking between players should affect their game behavior (Oskamp & Perlman, 1966; Swingle, 1968). Swingle and Gillis (1968) studied the strategies of subjects playing a two-person game with liked, disliked, or neutral others. As predicted, subjects were initially more cooperative when playing with liked others. McClintock and McNeal (1967), using a "maximizing differences game," found similar results; however, mutual cooperation was found to be less stable in friendly groups than in hostile groups. An interesting finding was reported by Oskamp and Perlman (1966). They reported that at Pomona College, a small school, subjects cooperated to a significantly greater extent with best friends than with disliked persons. The reverse was found at Claremont, a much larger school. With the exception of the above conflicting data, most of the studies indicate a positive correlation between attraction and cooperation in a two-person game. Previous research has investigated the effects of attraction upon strategy. The present research investigated the effects of strategy upon attraction.

Experiment 1

The purpose of the first experiment was to investigate the role of partner's strategy and the subject's own strategy upon attraction among the

players of a mixed-motive game. It was hypothesized that cooperative players are more attractive than are competitive players and that cooperative players indicate greater attraction toward others than do competitive players.

Method

Subjects

Twenty male undergraduate students (upper division) were employed as subjects.

Description of Apparatus

The apparatus consisted of a partitioned experimental room, four subject-response consoles, and experimenter's control console, a projection screen visible to all subjects, and a slide projector. Subjects were tested in groups of four, visually isolated from each other by partitions. Each subject was seated at a table which was equipped with a response console. Each subject-response console was equipped with two response buttons which are illuminated when pushed. One button had a green plastic cap on it; the other had a red plastic cap on it. Also mounted on the subject console were three sets of indicator lights which purportedly indicated the responses of the other three members of the group. The indicator lights were equipped with red and green plastic caps identical to those on the pushbuttons. The sets of indicator lights were labeled "Subject A", "Subject B" and "Subject C".

The experimenter-control console was equipped with four sets of lights corresponding to the four subjects. Three control switches permitted the experimenter to pre-set each stranger's response to agree or disagree with the subjects own response. A pushbutton allowed the experimenter to present all group member's responses simultaneously, and a reset button cleared all

displays for the next trial.

Procedure and experimental design

Subjects reported to the experimental room in groups of four. The experiment was explored as an interpersonal learning and decision-making study. Subjects were instructed to learn as much about each other as possible, while attempting to maximize their individual gains.

The payoff matrix (Figure 1) was explained and subjects were instructed to use a tally sheet, which was placed on the table, to keep a record of their choices and payoffs. They were also instructed to play the game as if each point on the payoff matrix represented a penny. Two practice trials were run, and then twenty trials were played. The players were instructed to record responses and payoffs for each player on each trial. At the conclusion of the twenty trials subjects were asked to complete an evaluation of each player. The evaluation contained three Likert-type rating scales (see Ettinger, Nowicki, & Nelson, 1970) which were summed to provide the measure of attraction. The items dealt with having the person as a friend, work partner, and roommate.

All subjects played the same game and received the same experimental manipulations. Each subject viewed the responses of three other players, one of whom was 0% cooperative, one 25% cooperative, and one 75% co-operative, all manipulated by the experimenter. After the game, subjects were stratified on the basis of their own strategies into two groups. Cooperative subjects included those whose frequency of cooperative responses was in the top half of the group. The bottom 50% were placed in the competitive group. This produced a 2x3 factional design (strategy of subject x strategy of other) with

repeated measure on the last factor.

Results

The main effect of strategy of others was not significant nor was there an effect on attraction associated with subject's own strategy. The unexpected interaction between the two was significant (see Tables 1 and 2). The simple main effect of strategy of other was significant for the cooperative group ($F = 4.06$, $df = 2,36$, $p < .01$) but not for the competitive group ($f < 1$). Correlation coefficients were computed between number of similar responses in the game and attraction toward each stranger. Table 3 illustrates that the correlations were significant in all three conditions.

A further exploration of the relationship between similarity of strategy and attraction is presented in Table 4. Ignoring the experimental manipulation, the simulated others were ranked according to the number of times the subject's response was similar to each of the three others. Thus, the repeated measures factor was changed from strategy of other to similarity of strategy of other. Figure 2 illustrates the effect quite well. Both cooperative and competitive subjects indicated greatest attraction toward the most similar other, and least toward the least similar other. The fact that the effect was stronger in cooperative subjects than in competitive subjects produced an interaction between similarity of other and strategy of subject.

In the post-experimental discussion none of the subjects revealed suspicion that the responses of the other players were faked. Most of the subjects indicated that they enjoyed the game and would like to continue playing (preferably for money).

Experiment 2

The preceding experiment suggested that similarity of strategies plays a significant role in the determination of attraction between players in the game. The present experiment was carried out as an extension and replication of Experiment 1.

Method

Thirty-two males were drawn from an introductory psychology course. As in the previous experiment, they reported to the experimental room in groups of four. The game was explained, and subjects were given instructions identical to those in Experiment 1. The only changes in procedure involved the strategy of one of the players. In experiment 1 subjects viewed three players a 0%, a 25%, and a 75% cooperative player. In the present experiment a 50% cooperative player replaced the 25% cooperative player. The 50% other was included in order to avoid having two players who were playing a competitive game most of the time. Subjects were stratified into four levels of cooperative choice (quartiles), producing a 4x3 factorial design with repeated measures on the last factor. Since similarity of strategy and attraction were highly correlated in Experiment 1, other players were also ranked according to their degree of similarity, ignoring the manipulation, and an analysis of varience was computed on the attraction ratings.

Results

Table 5 presents the analysis of variance of attraction ratings for the strategy of subject by strategy of other design. It is clearly evident that the results of Experiment 1 were not replicated. None of the main effects attained significance nor did the interaction; however, the main effect of strategy of other approached significance. The 50% cooperative other re-

ceived the highest attraction ratings from subjects in all four quartiles

The results of the analysis in which others were ranked into most, middle, and least similar also failed to replicate Experiment 1 (see Table 6 and Fugure 3). The cooperative subjects (third and fourth quartiles combined) evidenced the effect found in Experiment 1. The simple main effect of similarity in the cooperative group was significant as in Experiment 1 ($F = 5.84$, $df = 1, 30$, $p < .01$). However, competitive subjects liked the most similar other least, which was the opposite to the results found among cooperative subjects.

Discussion

The conclusions regarding the role of cooperation and competition must be tentative; however, it seems that, in general, cooperative others were more favorably evaluated by most subjects than were competitive others (see Figure 4). The relationship seems to be mediated by the subject's own strategy. In both Experiments 1 and 2 similarity of strategy played a greater role among cooperative subjects than among competitive subjects. Similarity of other and cooperation of subject had an interactive effect upon attraction (see Figures 2 and 3 and Tables 4 and 6). Cooperative subjects in both experiments liked the group member who was most similar better than the others. The least similar other was liked least. Competitive subjects evidenced the same trend in Experiment 1, but in Experiment 2 they indicated the greatest amount of attraction toward the other who was neither most nor least similar. The most similar other was liked least, which was a complete reversal of the findings in Experiment 1. Perhaps cooperative subjects expected to be positively evaluated by other cooperative players but not by competitive players, which seems to be a logical conclu-

sion to draw from the game experience.

For cooperative subjects, similarity and cooperation on the part of others were both working in the same direction, which may account for the significant simple main effects of similarity of others upon attraction towards them. For competitive subjects, similarity and cooperation of others were not working in the same direction. If another player was similar to a competitive subject, then he was probably also competitive. Competitive subjects may have received conflicting cues regarding the likelihood of another player's being reinforcing. Cooperation on the part of another player may have provided cues that he would be positively reinforcing. The degree of similarity probably provided cues that the other player would be negatively reinforcing. Competition on the part of another player may have led subjects to expect negative evaluations, but the degree of similarity may have produced the opposite expectancy. It seems that competitive subjects may have compromised and indicated the greatest degree of attraction to the other who was neither most similar nor least similar. The results seem to fit within a discrimination learning model of interpersonal attraction offered by Ettinger, Nowicki, and Nelson (1970).

Since the research on the four-person game was exploratory in nature, it would be premature to make confident statements regarding the subjects' motives for indicating different degrees of liking. It is not too difficult, however, to conceive of similarity and cooperation in the game as providing minimal cues regarding the likelihood of another player's being reinforcing. It is quite possible that these are the cues to which subjects are responding.

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TABLE 1

Analysis of Variance of Attraction Ratings: Experiment 1

(Strategy of Other by Strategy of Subject)

Source	df	MS	F
A (Strategy of Subject)	1	2.4000	< 1
Subjects within groups (error between)	18	15.9444	
B (Strategy of Other)	2	12.5167	
AB	2	35.3166	3.2516**
B x Subject within group (error within)	36	10.8611	

** $p < .01$

TABLE 2

Means and Standard Deviations of Attraction Ratings Toward Each Other Player: Experiment 1

	Strategy of Other					
	75% Cooperative		25% Cooperative		0% Cooperative	
Strategy of Subject	Mean	SD	Mean	SD	Mean	SD
Cooperative	15.10	2.66	11.80	3.71	11.20	3.94
Competitive	12.10	2.70	13.30	3.16	12.90	3.75

TABLE 3

Product-Moment Correlations Between Attraction and Similarity for Each Other Player: Experiment 1.

	75% Cooperative	25% Cooperative	0% Cooperative
r	.51	.55	.43
p level	.01	.01	.05

TABLE 4

Analysis of Variance of Attraction Ratings: Experiment 1

(Similarity by Strategy of Subject)

Source	df	MS	F
A (Strategy of Subject)	1	.0667	<1
Subjects within groups	18		
B (Similarity	2	192.2167	99.1420**
AB	2	15.2160	8.3600*
B x Subjects within groups	36	1.9388	

** $p < .001$

* $p < .01$

TABLE 5

Analysis of Variance of Attraction Ratings: Experiment 2

(Strategy of Other by Strategy of Subject)

Source	df	MS	F
A (Strategy of Subject)	3	32.0277	1.6209
Subjects within group	28	19.7589	
B (Strategy of Other)	2	45.1250	3.1391*
AB	6	17.5694	1.2222
B x Subjects within groups	56	141.3750	

* $p = .07$

TABLE 6

Analysis of Variance of Attraction Ratings: Experiment 2

(Similarity by Strategy of Subject)

Source	df	MS	F
A (Strategy of Subject)	1	8.7083	< 1
Subjects within group	30		
B (Similarity of Other)	2	5.9062	< 1
AB	2	62.5521	4.3451**
B x Subjects within groups	60	14.3958	

** $p < .01$

Figure Captions

Fig. 1. Payoff matrix used in Experiment 1.

Fig. 2. Attraction toward strangers as a function of similarity of strategy and strategy of subject: Experiment 1.

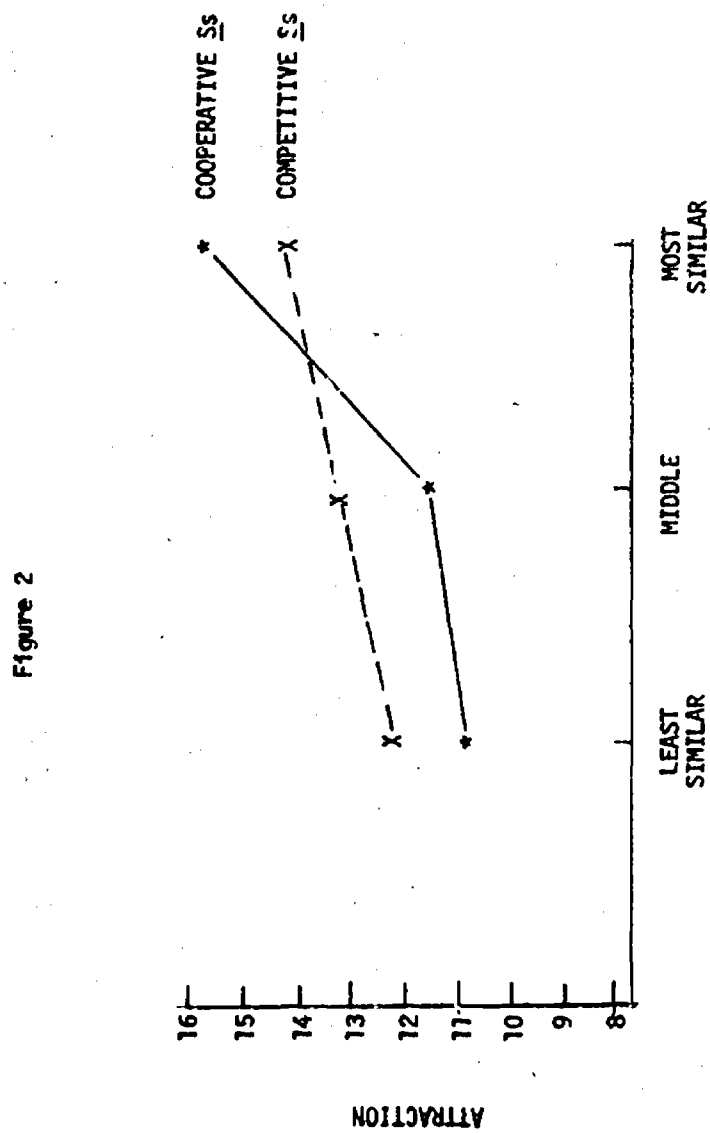
Fig. 3. Attraction toward strangers as a function of similarity of strategy and strategy of subject: Experiment 2.

Fig. 4. A comparison of attraction toward the 0% and 75% cooperative others in Experiments 1 and 2 (cooperative and competitive subjects combined).

Figure 1

FOUR-PERSON GAME PAYOFF MATRIX

	4 GREEN	0 RED	3 GREEN	1 RED	2 GREEN	2 RED	1 GREEN	3 RED	0 GREEN	4 RED
INDIVIDUAL PAYOFF	8	-	7	10	5	6	2	4	-	1
TOTAL PAYOFF TO GROUP	32		31		22		14		4	


COOPERATIVE Ss
COMPETITIVE Ss
ATTRACTION
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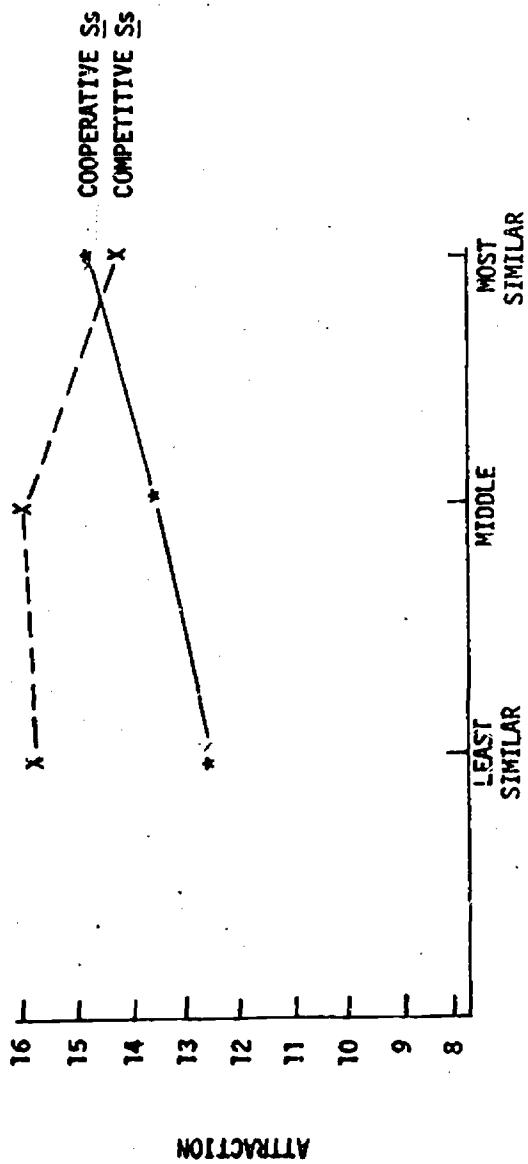
LEAST SIMILAR
MIDDLE
MOST SIMILAR

Figure 2


COOPERATIVE Ss
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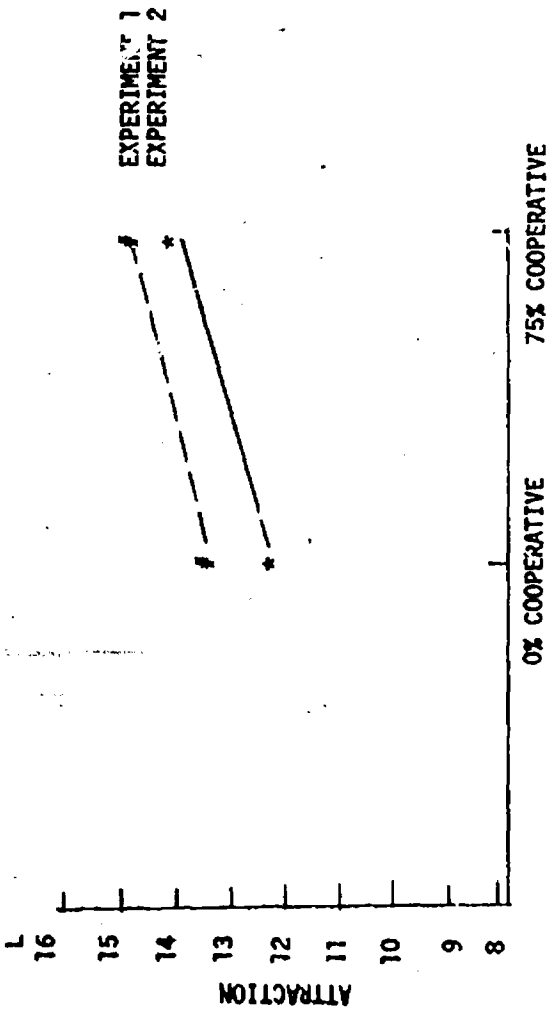
ATTRACTION

Figure 3

Figure 4


EXPERIMENT 1
EXPERIMENT 2
ATTRACTION
16
15
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8
0% COOPERATIVE
75% COOPERATIVE